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NORTHEASTERN RESEARCH NOTES

NORTHEASTERN FOREST EXPERIMENT STATION
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WEED KILLERS MAY BE USEFUL IN REFORESTING OLD BURNS

MORE THAN 6 million acres in the 12 Northeastern and Middle Atlantic States need to be reforested, according to Forest Service estimates. Yet many of the sites that need planting are rocky and steep and hard to plant. In many places there is a dense cover of grasses, weeds, and shrubby growth. Old burns in the northern hardwood-hemlock forests and spruce-fir forests are especially hard to plant.

Part of the problem is to release the newly planted seedlings from competition, so they can get the light and soil moisture they need. They also need to be protected from competing growth that bends down under snow cover and smothers or breaks them.

A test of chemical herbicides

TO FIND OUT if chemical plant killers can be used in preparing planting sites, preliminary tests were made with four chemicals: ammate, 2,4-D, G,652, and common salt. The test area

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was in the Allegheny National Forest, on a lower south-facing slope that was covered with bracken fern, goldenrod, and bush honeysuckle.

Three questions were considered: (1) Would the herbicides kill these competing plants?; (2) Would the planted trees live on treated areas?; (3) How long would the chemicals prevent reinvasion by weeds and shrubs?

Six treatments were used, each on three 1-milacre quadrats, as follows:

Chemical used	Concentration per gallon of water	Rate of application per acre
Ammate[1] (Dupont)	0.5 lb.	218 gal.
Ammate (Dow)	1.0 lb.	435 gal.
2,4-D[2] (Dupont)	6 level tsp.	200 gal.
2,4-D (Dow)	8 level tsp.	200 gal.
G,652[3]	8 level tsp.	200 gal.
Common salt	2.7 lb.	75 gal.

[1]Ammonium sulfamate. [2]Sodium salt of 2,4-Dichlorophenoxyacetic acid. [3]Methyl ester of 2,4-Dichlorophenoxyacetic acid.

The chemicals were applied by spraying, on August 4-5, 1947, under calm afternoon conditions. Some of the 2,4-D solutions may have been diluted by a light shower.

Results, 1947 to date

ONLY AMMATE proved effective.

The other chemicals had slight effects on leaf tissue and caused terminal shoots to curl, but did not lessen the density of plant growth. During the 1948 growing season, no differences could be seen between untreated areas and areas treated with the other chemicals.

Ammate killed some aspen, black cherry, and serviceberry seedlings as well as shrubby and herbaceous growth. Two weeks after spraying, all vegetation on the treated plots had turned brown, and aerial portions were dead. Six weeks later (at end of the 1947 growing season) these quadrats were still bare, except one treated with the weaker ammate solution. Here a few sheep sorrel seedlings and sickly bracken shoots appeared.

At the end of the 1948 growing season, the quadrats treated with the stronger ammate solution were still completely open. A scattered low cover of sheep sorrel, grass, sedge, and bush honeysuckle had reinvaded the three lightly treated quadrats.

At the end of the 1949 growing season, the heavily treated quadrats were still fairly open. The others were filling in with plant growth, but it was not nearly so dense as in adjacent untreated areas.

To test the effect of the chemicals on planted seedlings, two test trees of red pine and black locust were planted (in April 1948) in each of the six quadrats treated with ammate. These trees all survived and grew well through

the 1948 growing season. They apparently were not affected by ammate toxicity in the soil. However, the black locust suffered some damage from animals.

By the end of the 1949 growing season, the black locust seedlings had all died; but this was attributed to rodent damage. The pines had also suffered some damage from animals, but grew well. They were still alive and free to grow during the 1950 growing season.

Practical use indicated

RESULTS FROM this preliminary study indicate that ammate, applied as spray at the height of the growing season, may be useful for preparing planting sites and reducing competition for at least two growing seasons. However, damage by animals may prove to be the limiting factor in such planting.

At present, the most successful ammate treatment tested would cost about $50 per acre for full coverage of planting sites. Further studies should be aimed to reduce costs to a more reasonable level by determining the effects of ammate at different periods during the growing season, the lowest effective concentration, and the smallest spot needed to permit successful survival and growth of planted stock.

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